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Subsets of regulatory T cells and their roles in allergy

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In recent years, it is recognized that acquired immunity is controlled by regulatory T cell (T-reg). Since fundamental pathophysiological changes of allergy are mainly caused by hyper-responsiveness of immune system to allergens that acquire after birth, T-regs likely play key roles in the pathogenesis of allergy, particularly during the sensitization phase. However, accumulated information indicate that there are several distinctive subtypes of T-regs in man and each of them seems to play a different role in controlling immune system, which complicates the involvement of T-regs in allergy. The aim of the present study is to attempt to classify subtypes of T-regs and summarize their roles in allergy. T-regs should include natural Tregs (nT-reg) including inducible co-stimulator (ICOS)(+) T-regs, inducible/adaptive T-regs (iT-reg), interleukin (IL)-10-producing type 1 T-regs (Tr1 cells), CD8(+) T-regs and IL-17-producing T-regs. These cells share some common features including expression of Foxp3 (except for Tr1 cells), and secretion of inhibitory cytokine IL-10 and/or TGF- β . Furthermore, it is noticeable that T-regs likely contribute to allergic disorders such as dermatitis and airway inflammation and play a crucial role in the treatment of allergy through their actions on suppression of effector T cells and inhibition of activation of mast cells and basophils. Modulation of functions of T-regs may provide a novel strategy to prevent and treat allergic diseases.

Biography

Huiyun Zhang has completed her PhD from Shantou University Medical College and Post-doctoral studies from MacMaster University School of Medicine. She is the Director of Pathophysiology Department to Liaoning Medical University. She has published more than 50 research articles including 22 recorded in Scientific Citation Index and has been serving as an Editorial Board Member for several journals. Her research interest is to explore the diagnostic and therapeutic procedures based on the pathophysiology of allergy. Accordingly, she has obtained 3 National Natural Science Foundation of China (No. 81030054, 81241135, 81472016) and 1 Key Provincial Health Project and participated in 2 Major State Basic Research Program of China and 1 national sci-tech support plan (2014BAI07B02) as well as editing "Theoretical Allergology", "Experimental Allergology", "Clinical Allergology", "Allergology in Ear Nose Throat Head and Neck Diseases" and "Frontier Progress in Immunology" a total of five books on Allergology and Immunology in Chinese.

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